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Monitoring Neotropical and Migratory Birds in Alaska

15 May 2000–14 May 2001

John M. Wright

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RESEARCH PERFORMANCE REPORT

STATE: Alaska

COOPERATOR: Alaska Bird Observatory

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STUDY TITLE: Monitoring Neotropical and other Migratory Birds

AUTHOR: John M Wright

CONTRACT PERIOD: May 15, 2000–May 14, 2001

SUMMARY

In year 2000 monitoring of migratory landbirds continued for the ninth year at the Creamer's Refuge migration station in a cooperative project with the Alaska Bird Observatory. Mist nets were used to capture birds in spring on 37 days between 5 April and 14 June, and in fall on 57 days between 15 July and 29 September. The spring 2000 capture rate, 7.27 birds/100 net hours, for all species was very near the average for the first 9 years of this project (7.32). We captured 26 species in spring, including 19 Neotropical migrants. Seventy percent of all individuals captured were Neotropical migrants. The most frequently captured species in spring were the yellow-rumped warbler, common redpoll, dark-eyed junco, and American robin. The fall 2000 capture rate, 38.4 for all species, was the third highest in the 9-year history of the migration station. Twenty-one of the 31 species captured in fall were Neotropical migrants. Eighty percent of all individual birds captured were Neotropical migrants. The proportion of juvenile birds captured in fall, an index of production, was 0.92 in fall 2000, equaling the previous high recorded in 1998 and well above the 9-year average of 0.87. Data on timing of migration, molt and fat storage were reported in a master's thesis and 2 publications.

The educational program continued with banding demonstrations for school classes and other programs operating at maximum capacity.

Key words: Alaska, migration monitoring, mist netting, Neotropical migratory birds, educational programs.

CONTENTS

BACKGROUND

Declines in populations of migrant landbirds have been well documented in North America. Long distance migrants, including flycatchers, thrushes, and wood warblers that breed in North America and winter in neotropical Central and South America, are among the species of concern (Askins et al. 1990; Sauer and Droege 1992). Alaska is an important part of the breeding range of several species of boreal forest landbirds known to be declining in other portions of their North American breeding range.

A concerted international conservation effort, *Partners In Flight* Neotropical Migratory Bird Conservation Program, was developed in the early 1990s to address this problem. In Alaska, the *Boreal Partners in Flight* working group provides coordination and direction for local projects so that a comprehensive statewide monitoring and research program can be formed from the individual efforts of the many partners.

The Creamer's Refuge migration station is operated by the Alaska Bird Observatory in cooperation with ADF&G and a host of other contributors. The migration station is part of the statewide monitoring network, providing information on abundance and productivity on a

broad scale to complement Breeding Bird Survey, off-road point counts, and MAPS (Monitoring Avian Productivity and Survival) studies. Approximately 150 migration-monitoring sites are located throughout North America. Creamer's is the northernmost monitoring station and the longest running of 6 stations in Alaska. Among the 19 species captured in adequate numbers for monitoring at the Creamer's migration station are 3 species of conservation concern (gray-cheeked thrush and blackpoll warbler: Alaska State "Species of Special Concern" and Boreal Partners In Flight "Priority Species for Conservation"; Hammond's flycatcher: Boreal Partners In Flight "Priority Species for Conservation").

OBJECTIVE

- Gather information in spring and fall 2000 on the abundance and productivity of migratory songbirds as part of a long-term monitoring project in the boreal forest of central Alaska.

- Collect information on timing of migration, breeding, and molt for a variety of landbirds breeding in central Alaska.

STUDY AREA

The migration station is located on Creamer's Field Migratory Waterfowl Refuge in Fairbanks and encompasses about 20 ha of boreal forest, shrub, and wetland habitats at the edge of farm fields.

METHODS

An array of mist nets was used to capture birds. Nets were opened about 7 hours each day from sunrise to early afternoon, weather permitting. In spring 2000 the netting was conducted from 25 April through 14 June. The fall 2000 netting season extended from 15 July to 30 September. The standard set of nets established in 1997 was operated in 2000. Birds were banded with standard aluminum leg bands, and information was collected on age, sex, wing chord, tail length, fat index, breeding condition, and molt.

Public education programs were also provided at the banding station. A 30–45 minute banding demonstration with information about bird migration, biology, and conservation was provided to 2–3 classes of local school children on most school days in May and September. Structured programs were also provided to groups from summer science camps and tours. In addition, the Alaska Bird Observatory operated the "Alaska Bird Camp", a weeklong, full-day program for 10–12-year-olds. Scheduled visitors were supplied with activity guides and individual booklets before their visit to the banding station. Impromptu presentations were provided to unscheduled drop-in visitors.

RESULTS

SPRING 2000

Abundance and Productivity

In spring 2000, nets were operated on 37 days between 25 April and 14 June for a total of 6177 net hours (Table 1). This netting effort was about 14% lower than the average for the previous 3 years due to inclement weather in 2000. We captured 449 birds, belonging to 26 species (Table 2). Seventy-three percent of the species captured were Neotropical migrants (38% Type A species wintering primarily south of the USA/Mexico border, 35% Type B species with some populations wintering south of the USA/Mexico border). Seventy percent of the individuals captured were Neoptropical migrants (17% Type A, 53 % Type B). The most frequently captured species were the yellow-rumped warbler, common redpoll, dark-eyed junco, and American robin. The overall capture rate in spring 2000 was nearly identical to the 9-year average (Table 3), but only 2 species (yellow-rumped warbler and dark-eyed junco) were captured at higher rates than their average. Nine species were captured at rates lower than average.

FALL 2000

Abundance and Productivity

In fall 2000, nets were operated for 57 days for a total of 12,265 net hours, very similar to the previous 2 years (Table 1). A total of 4713 birds were captured, with 31 species represented (Table 2). As in prior years, a high proportion of species captured (68%) was Neotropical migrants (39% Type A, 29% Type B). Neotropical migrants also comprised the majority of individuals captured (Type A, 22%; Type B, 58%). The yellow-rumped warbler, American tree sparrow, dark-eyed junco, orange-crowned warbler and Lincoln's sparrow were captured most frequently, followed by the yellow warbler and ruby-crowned kinglet.

The overall capture rate of 38.43 birds/100 net hours was above the 1992–2000 average (32.53) and was the third highest in the 9 years of this project (Table 4). Among the 19 regularly captured species in fall, 4 were captured at rates higher than their 9-year average, while 10 were captured at rates below their average.

In fall 2000, 92% of birds captured were young of the year (HY, hatch year) (Table 5). This is higher than the 9-year average (87%). The proportion of young in 6 of the 19 commonly captured species was higher in 2000 than the long-term average; in just 1 species the proportion of young was lower than average and 12 species were close to average. Four species set a new high for proportion of young, another equaled its previous high, and none set a new low.

Timing of Migration, Molt, and Fat Storage

PUBLICATIONS

Information on timing of migration, molt, and fat storage from data collected at the Creamer's Migration Station was reported in a thesis for a graduate degree by Anna-Marie Benson (biologist with the Alaska Bird Observatory), advised by Kevin Winker, Curator of Ornithology at the University of Alaska Museum (abstract in Appendix A., Benson 2000). Two publications using data from the Creamer's Migration Station were completed in 2000, "Timing of breeding range occupancy among high-latitude passerine migrants" (Benson and Winker 2000) and "Updated geographic distribution of eight species of passerines in central Alaska (Benson, Pogson and Doyle 2000).

EDUCATION

Sixty-one school groups (1645 individuals) participated in banding demonstrations provided by the Alaska Bird Observatory in spring and fall 2000 (Table 6). The Alaska Bird Observatory conducted its third annual weeklong "Alaska Bird Camp" in 2000, with ten 10–12-year-olds attending. Workshops on the "Basics of Birding," "Warblers," and other topics were also provided on the Refuge. More than 100 volunteers, including 10 school-age youth, assist in the banding project and other ABO programs. The Alaska Bird Observatory at the Creamer's Migration Station hosted the Western Bird Banding Association year 2000 annual meeting.

CONCLUSIONS AND RECOMMENDATIONS

This was the ninth year of the long-term migratory bird monitoring effort at Creamer's Refuge. The migration station is a cooperative project conducted by the Alaska Bird Observatory with support from the Department of Fish and Game. This arrangement with a local nonprofit organization has proven capable of sustaining the consistent effort necessary to maintain a project requiring 15–20 years or more of data collection. Recent analyses and reviews have confirmed the usefulness of standardized netting stations for study of the abundance and productivity of migratory bird populations (Dunn and Hussell 1995; Johnson and Geupel 1996; Dunn et al. 1997). In addition to its value in monitoring species of concern, this project is also gathering important information on the timing of migration, reproduction, molt, juvenile dispersal, changes in body condition, and other life-history events. It has also become a valued educational program for regional schools and the general community.

ACKNOWLEDGMENTS

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The dedicated board of directors and staff of the Alaska Bird Observatory are responsible for the success of this long-term project. I would especially like to thank Anna-Marie Benson,

Chief Biologist; Nancy DeWitt, Executive Director; David Shaw, Banding Biologist; and Andrea Swingley, Education Coordinator, for the key roles they played in this effort. Thanks also to the interns and volunteers who regularly were up before dawn to run the nets. Mark Ross, ADF&G, helped coordinate visits by school groups and developed complementary educational programs for visiting school children.

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Table 1 Mist netting effort at Creamer's Refuge migration station, 1992–2000

Season		Year								
		1992	1993	1994	1995	1996	1997	1998	1999	2000
Spring	Number of days nets open	42	43	41	45	44	42	40	40	37
	Net hours	6903	10,552	11,252	12,731	12,411	7,548	6,760	7,180	6,177
	Number of nets per day	16–29	16–33	27–47	36–47	33–45	26	26	24-26	21-26
Fall	Number of days nets open	46	53	52	58	57	66	55	61	57
	Net hours	5890	13,711	13,934	14,156	14,985	14,617	12,091	12,111	12,265
	Number of nets per day	4–35	11–47	21–51	16–49	18–49	36	36	26-36	33-36

Table 2 Birds captured at Creamer's Refuge migration station, 2000

Species	Migration Type[a]	Spring 2000	Fall 2000
Sharp-shinned Hawk (*Accipter striatus*)	B	2	4
Solitary Sandpiper (*Tringa solitaria*)	A	7	
Downy Woodpecker (*Picoides pubescens*)	R	1	
Yellow-bellied Flycatcher (*Empidonax flaviventris*)	A		1
Alder Flycatcher (*Empidonax alnorum*)	A		40
Hammond's Flycatcher (*Empidonax hammondi*)	A	11	37
Northern Shrike (*Lanius excubitor*)	N		1
Gray Jay (*Perisoreus canadensis*)	R	1	
Black-capped Chickadee (*Poecile atricapillus*)	R		96
Boreal Chickadee (*Poecile hudsonicus*)	R		8
Brown Creeper (*Certhia americana*)	R		1
Ruby-crowned Kinglet (*Regulus calendula*)	B	1	112
Gray-cheeked Thrush (*Catharus minimus*)	A	2	17
Swainson's Thrush (*Catharus ustulatus*)	A	13	29
Hermit Thrush (*Catharus guttatus*)	B	2	23
American Robin (*Turdus migratorius*)	B	34	14
Varied Thrush (*Ixoreus naevius*)	N	1	5
American pipit (*Anthus rubescens*)	N	1	
Orange-crowned Warbler (*Vermivora celata*)	A	13	471
Yellow Warbler (*Dendroica petechia*)	A	10	119
Yellow-rumped Warbler (*Dendroica coronata*)	B	126	1757
Townsend's Warbler (*Dendroica townsendi*)	A		5
Blackpoll Warbler (*Dendroica striata*)	A	2	30
Northern Waterthrush (*Seiurus noveboracensis*)	A	9	29
Wilson's Warbler (*Wilsonia pussilla*)	A	8	76
American Tree Sparrow (*Spizella arborea*)	N	10	812
Savannah Sparrow (*Passerculus sandwichensis*)	B	18	59
Fox Sparrow (*Passerella iliaca*)	B	4	20
Lincoln's Sparrow (*Melospiza lincolnii*)	A	1	203
Golden-crowned *Sparrow (Zonotricia atricapilla*)	N		1
White-crowned Sparrow (*Zonotrichia leucophrys*)	B	14	65
Dark-eyed Junco (*Junco hyemalis*)	B	38	660
Rusty Blackbird (*Euphagus carolinus*)	N	4	11
Common Redpoll (*Carduelis flammea*)	N	118	7
Pine Siskin (*Carduelis pinus*)	N		1
Totals: Individuals		449	4713
Species		26	31
Dates nets open		25 Apr–14 Jun	15 Jul–29 Sep
Number of days nets operated		37	57
Number of net hours		6177	12265

[a] Winter range/migration: A = primarily south of USA/Mexico border; B = some populations south of US/Mexico border; P = Pacific/Eurasia/Africa; N = North America; R = Resident.

Table 3 Capture rates (birds/100 net hr) in spring of common species and total for all species, Creamer's Refuge migration station, spring 2000

Species	1992	1993	1994	1995	1996	1997	1998	1999	2000	1992-2000 Average
Hammond's Flycatcher	0.17	0.12	0.14	0.17	0.06	0.12	0.16	0.11	0.18	0.14
Ruby-crowned Kinglet	0.29	0.01	0.04	0.05	0.06	0.04	0.06	0.00	0.02	0.06
Gray-cheeked Thrush	0.23	0.13	0.19	0.09	0.18	0.07	0.21	0.15	0.03	0.14
Swainson's Thrush	0.41	0.45	0.49	0.38	0.63	0.33	0.58	0.28	0.21	0.42
American Robin	0.45	0.34	0.28	0.35	0.29	0.50	1.17	0.75	0.55	0.52
Orange-crowned Warbler	0.58	0.47	0.40	0.36	0.24	0.25	0.78	0.50	0.21	0.42
Yellow Warbler	0.67	0.26	0.36	0.06	0.17	0.13	0.18	0.06	0.16	0.23
Yellow-rumped Warbler	1.58	0.93	0.48	0.70	0.65	0.94	1.46	1.11	2.04	1.10
Northern Waterthrush	0.33	0.13	0.58	0.19	0.44	0.32	0.21	0.21	0.15	0.28
Wilson's Warbler	0.48	0.51	0.51	0.46	0.14	0.17	0.21	0.13	0.13	0.30
American Tree Sparrow	0.51	0.01	0.08	0.07	0.19	0.01	0.18	0.06	0.16	0.14
Savannah Sparrow	0.83	0.14	0.29	0.25	0.42	0.20	0.56	0.31	0.29	0.37
Lincoln's Sparrow	0.09	0.05	0.11	0.16	0.10	0.11	0.99	0.17	0.02	0.20
White-crowned Sparrow	0.20	0.08	0.16	0.08	0.07	0.17	0.44	0.22	0.23	0.18
Dark-eyed Junco	0.42	0.09	0.21	0.29	0.73	0.45	0.72	0.61	0.62	0.46
Common Redpoll	1.17	0.18	1.99	0.68	0.08	0.20	9.51	0.63	1.91	1.82
Total (all species)	10.46	4.27	6.91	4.63	4.87	4.29	17.28	5.93	7.27	7.32

Table 4 Capture rates (birds/100 net hr) in fall of common species and total for all species, Creamer's Refuge migration station, fall 2000

Species	1992	1993	1994	1995	1996	1997	1998	1999	2000	1992-2000 Average
Alder Flycatcher	0.58	0.55	0.44	0.47	0.48	0.86	0.47	0.33	0.33	0.50
Hammond's Flycatcher	0.14	0.10	0.29	0.35	0.59	0.50	0.28	0.31	0.30	0.32
Black-capped Chickadee	0.58	0.18	0.21	0.48	0.31	0.23	0.36	0.34	0.78	0.39
Ruby-crowned Kinglet	0.88	0.65	0.91	0.87	1.56	1.36	1.15	0.51	0.91	0.98
Gray-cheeked Thrush	0.63	0.18	0.20	0.35	0.11	0.28	0.33	0.40	0.14	0.29
Swainson's Thrush	1.06	0.67	0.73	1.24	0.59	1.29	0.88	1.04	0.24	0.86
American Robin	2.73	0.15	0.27	0.24	0.24	0.27	0.27	0.27	0.11	0.51
Orange-crowned Warbler	7.35	1.71	4.23	6.12	3.06	4.41	7.59	5.48	3.84	4.87
Yellow Warbler	2.17	0.43	0.64	1.38	0.76	1.29	0.69	1.58	0.97	1.10
Yellow-rumped Warbler	13.40	0.41	7.18	4.15	7.77	8.44	11.17	5.60	14.33	8.05
Blackpoll Warbler	1.38	0.15	0.35	0.36	0.33	0.70	0.36	1.39	0.24	0.58
Northern Waterthrush	0.69	0.22	0.12	0.20	0.22	0.36	0.33	0.40	0.24	0.31
Wilson's Warbler	2.15	0.79	0.83	1.19	0.50	1.27	1.26	1.04	0.62	1.07
American Tree Sparrow	1.81	2.88	2.46	4.66	1.83	5.22	9.95	5.93	6.62	4.60
Savannah Sparrow	0.75	0.52	0.20	1.23	0.55	0.72	0.78	1.64	0.48	0.76
Fox Sparrow	0.26	0.23	0.30	0.23	0.25	0.45	0.58	0.57	0.16	0.34
Lincoln's Sparrow	2.73	1.09	1.27	2.56	1.56	1.68	2.35	1.09	1.66	1.78
White-crowned Sparrow	0.69	0.31	0.43	0.30	0.80	0.48	0.80	0.26	0.53	0.51
Dark-eyed Junco	2.33	1.18	3.84	2.92	3.86	3.17	6.75	3.38	5.38	3.65
Total (all species)	43.16	12.58	25.32	30.78	26.73	33.41	47.58	34.79	38.43	32.53

Table 5 Proportion of juvenile (HY, hatch year) birds in fall captures of common species and for all individuals, Creamer's Refuge migration station, fall 2000

Species	1992	1993	1994	1995	1996	1997	1998	1999	2000	1992-2000 Average
Alder Flycatcher	0.89	0.61	0.76	0.64	0.72	0.68	0.82	0.63	0.75	0.72
Hammond's Flycatcher	0.89	0.85	0.76	0.96	0.89	0.90	1.00	0.83	0.92	0.89
Black-capped Chickadee	0.94	0.75	0.69	0.90	0.93	0.94	1.00	0.82	0.92	0.88
Ruby-crowned Kinglet	0.82	0.90	0.89	0.91	0.87	0.87	0.91	0.92	0.93	0.89
Gray-cheeked Thrush	0.79	0.76	0.75	0.78	0.88	0.76	0.90	0.90	0.88	0.82
Swainson's Thrush	0.82	0.79	0.86	0.91	0.96	0.90	0.89	0.93	0.93	0.89
American Robin	0.42	0.50	0.89	0.76	0.86	0.85	0.87	0.88	0.92	0.77
Orange-crowned Warbler	0.83	0.63	0.86	0.86	0.84	0.79	0.91	0.87	0.82	0.82
Yellow Warbler	0.91	0.58	0.88	0.84	0.94	0.94	0.90	0.90	0.92	0.87
Yellow-rumped Warbler	0.91	0.75	0.94	0.91	0.95	0.94	0.93	0.90	0.93	0.91
Blackpoll Warbler	0.94	0.71	0.86	0.94	0.96	0.92	0.84	0.96	1.00	0.90
Northern Waterthrush	0.93	0.87	0.94	0.93	0.97	0.90	0.98	0.88	0.90	0.92
Wilson's Warbler	0.90	0.67	0.84	0.89	0.85	0.96	0.96	0.98	0.88	0.88
American Tree Sparrow	0.67	0.72	0.87	0.81	0.85	0.90	0.93	0.87	0.96	0.84
Savannah Sparrow	0.87	0.92	0.96	0.96	0.98	0.92	0.88	0.95	0.98	0.94
Fox Sparrow	0.69	0.77	0.79	0.81	0.78	0.68	0.83	0.70	0.80	0.76
Lincoln's Sparrow	0.92	0.79	0.93	0.95	0.97	0.93	0.95	0.92	0.97	0.92
White-crowned Sparrow	0.86	0.90	0.90	0.91	0.93	0.94	0.93	0.68	0.92	0.89
Dark-eyed Junco	0.84	0.88	0.96	0.90	0.91	0.89	0.93	0.89	0.95	0.91
Total (all individuals captured)	0.84	0.75	0.90	0.87	0.90	0.89	0.92	0.88	0.92	0.87

Table 6 Educational programs and visitors, Creamer's Refuge banding station, 2000

Program	Number of groups	Number of individuals in groups
Spring and Fall Banding	61	1,645
Demonstrations		
Invited Programs	2	30
Summer Adult Groups	6	92
Summer Youth Groups	9	181
Alaska Bird Camp	1	10
Workshops, Walks, Seminars	9	295
Western Bird Banding Assoc.	1	46
Independent Visitors		428
Totals	89	2727

Appendix A. Abstract of M.S. Thesis by Anna-Marie Benson, Temporal patterns of migration, molt, and fat storage among high-latitude passerine migrants. University of Alaska, Fairbanks.

Aspects of migration, fattening, and molt in trans-continental passerine migrants were examined during spring and fall migration in Fairbanks, Alaska (64 50' N, 147 50'W). From 1992 to 1998, 25,718 birds of 18 species were banded. Based on median dates of spring and autumn passage, species-level estimates of the duration of breeding range occupation ranged from 48 to 129 days. Adults departed significantly later than immatures in 11 of 18 species examined and significantly earlier in only one species, the Alder Flycatcher. Adults had significantly higher fat score than immatures in most species, but these differences were attributable to the influence of ambient temperatures, length of preceding night, and the time of day the bird was captured. Adults of many species overlapped the final stages of prebasic molt with autumn migration, and individuals that did so had less stored fat than those that were not molting.